

## SG-Link-200® Connecting and calibrating mV/V sensors

### Component Overview

The SG-Link-200 is a 3-channel wireless analog sensor node with 3 differential input channels (strain channels) designed to support strain gauges and load cells.



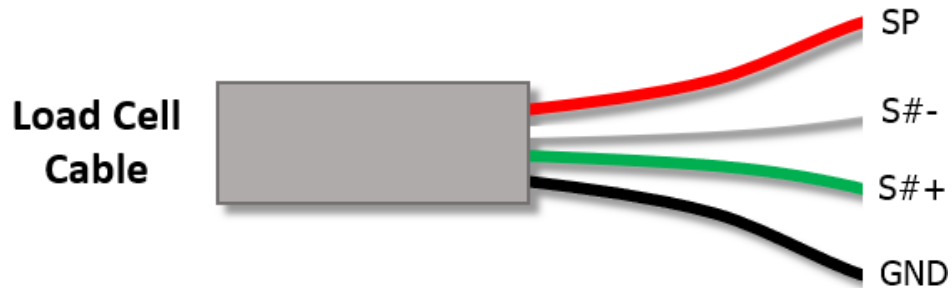
Series MIN800 Miniature Tension/Compression Loadcell with 2 mV/V Output sensitivity and 100 LBF full scale range used for the following examples.



# MicroStrain Sensing Technical Note

## Connecting the Load Cell to the SG-Link-200

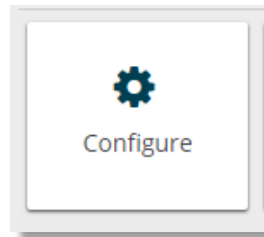
1. Connect the wires of the sensor to one of the SG-Link-200 differential input channels (channels 1-3) according to the below diagram (reference the [SG-LINK-200 Quick Start Guide](#)):



**Note:** If the output goes down when load is applied to the sensor reverse the green and white wires in the SG-Link-200.

## Configuring the SG-Link-200 in SensorConnect

1. Open SensorConnect and power on the SG-Link-200.
2. From the node list select the node being tested.
3. Click on the **Configure** tile under the Control options.



4. Take the sensitivity of the sensor and multiply it by the channel excitation voltage. In the case of the SG-Link-200 the excitation voltage is **2.5V**. The result of this will allow you to select the appropriate Input Range. See the below example.

### Example:

Loadcell output sensitivity:	2mV/V
Excitation voltage:	2.5V
Result:	$2\text{mV/V} \times 2.5\text{V} = 5.0\text{mV}$

In this example you would want to select **+/- 19.532mV** from the Input Range dropdown options.

# MicroStrain Sensing Technical Note

Excitation Voltage ? 2.5 V

Input Range ?

Channel(s)	Input Range
Differential (ch1)	±19.532 mV Gain: 4
Differential (ch2)	±312.5 mV Gain: 8
Differential (ch3)	±156.25 mV Gain: 16
	±78.125 mV Gain: 32
	±39.063 mV Gain: 64
	±19.532 mV Gain: 128

Low Pass Filter ?

Channel(s)

Differential (ch1-ch3)

5. Click on the **Calibration** tab.

Hardware **Calibration** ! Sampling Power

Excitation Voltage ? 2.5 V

Input Range ?

Channel(s)	Input Range
Differential (ch1)	±19.532 mV
Differential (ch2)	±39.063 mV
Differential (ch3)	±39.063 mV

6. Click on **Cal Tools**, then select **mV/V**.

Hardware **Calibration** ! Sampling Power

Linear Calibration ?

Channel(s)	Unit	Calibration
Differential (ch1)	Microstrain	$= (-1.8025e-3 \times \text{bits}) + 17354.752$
Differential (ch2)	Microstrain	$= (-1.7594e-3 \times \text{bits}) + 15604.3584$
Differential (ch3)	Microstrain	$= (-1.7419e-3 \times \text{bits}) + 15488.2051$

Cal Tools !

- Strain
- mV/V**
- Manual
- Tare

# MicroStrain Sensing Technical Note

7. Enter the sensor's output sensitivity into the **mV/V max capacity** input field.
8. Enter the sensor's full scale range into the **Max Capacity** input field.
9. Enter the Unit desired from the drop-down menu.

mV/V Calibration ×

---

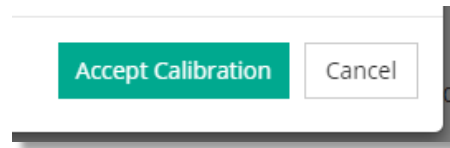
Node: 32743, Channel: ch1 - Differential (ch1)

Sensitivity:  mV/V

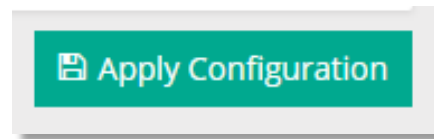
Max Capacity:

Slope: 4.6566e-5 lbs/bit  
Offset: -390.625 lbs  
Effective Range: -390.625 to 390.625 lbs

10. Click on **Accept Calibration**.



11. Click on **Apply Configuration**.



12. Go back to the **Cal tools** and Select **Tare**

Hardware Calibration ⓘ Sampling Power

---

Linear Calibration ⓘ

Channel(s)	Unit	Calibration
Differential (ch1)	<input type="text" value="Pound"/>	$= (4.6566e-5 \times \text{bits}) - 390.625$
Differential (ch2)	<input type="text" value="Microstrain"/>	$= (-1.7594e-3 \times \text{bits}) + 15604.3584$
Differential (ch3)	<input type="text" value="Microstrain"/>	$= (-1.7419e-3 \times \text{bits}) + 15488.2051$

**Cal Tools** dropdown menu:  
Strain  
mV/V  
Manual  
Tare

# MicroStrain Sensing Technical Note

13. With no load on the load cell (or to zero out with a pre-loaded sensor) Click the **Sample Now** (a good idea here is to click the Sample Now button several times and observe the current Measurement remains approx. same value).

Tare Offset ×

---

Node: 32743, Channel: ch1 - Differential (ch1)

Original Calibration: lbs = ( 4.6566e-5 x bits ) - 390.625

Current Measurement: 0.4772 lbs Sample Now

Current Load:

Applied Calibration: lbs = ( 4.6566e-5 x bits ) - 390.625

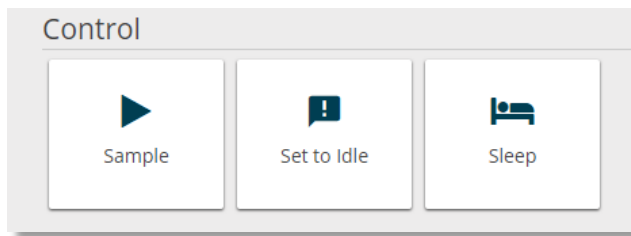
Offset: -391.1022 lbs (-0.4772) Apply Offset

Effective Range: -391.1022 to 390.1478 lbs Revert

---

14. Click the **Apply Offset** button to write the value to the node.

15. Under the Device section, click on the node, then click on the **Sample** tile from the Control panel.



16. Enable the channel being tested with the Sensor and the other sampling desired.

Network Settings:  Synchronized  Lossless Protocol: LXRS

<input checked="" type="checkbox"/>	Node	Channels	Sampling	Data Type	Log/Transmit	% Total	Status
<input checked="" type="checkbox"/>	32743	1 active	64 Hz continuously	float	Transmit	3.13%	✓ Ok

Raw Channels

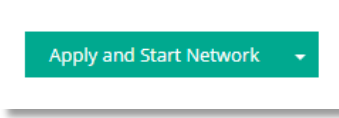
Differential (ch1)

Differential (ch2)

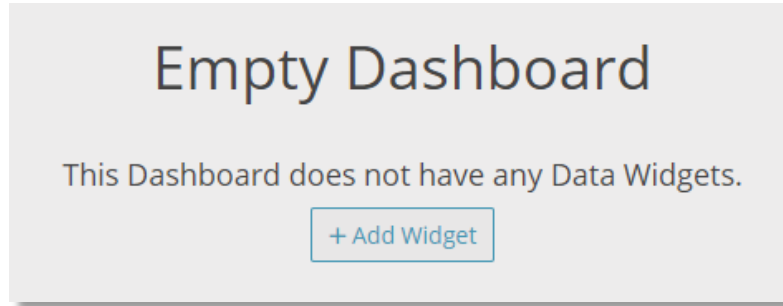
Differential (ch3)

# MicroStrain Sensing Technical Note

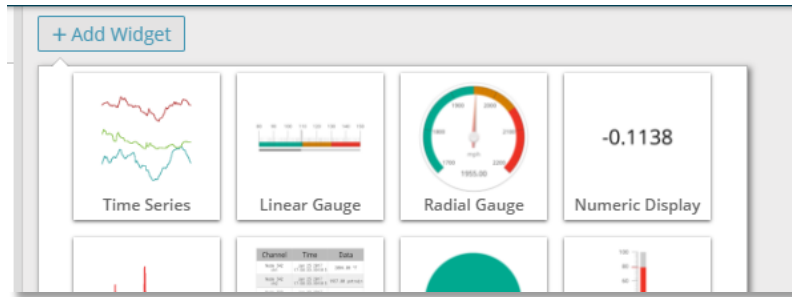
17. Once node is all configure Click **Apply and Start Network**.



18. Click the **Data** tab, then click on **+Add Widget**.



19. Select the **Time Series** widget.

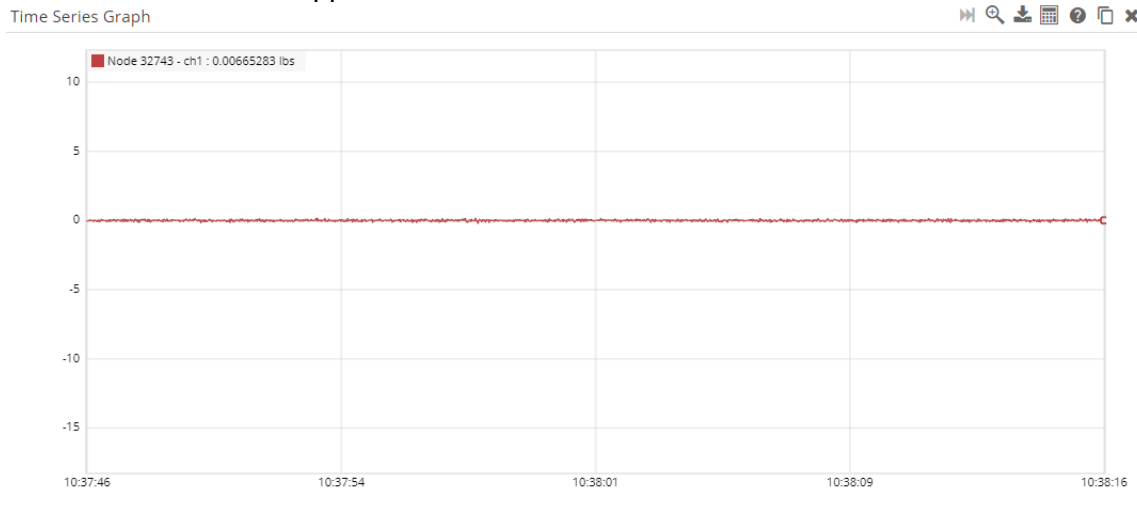


20. Select the node and channel to view the data output in the time series widget.

- ▼ Node 32743 ●
  - ch1 ●
  - ch2
  - ch3

# MicroStrain Sensing Technical Note

21. With no load (or at the pre-loaded value the channel was Tared at) the data coming in should be approx. zero



22. If possible, place known loads on the sensor to verify calibration.